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I

MONEY AND THE ECONOMIC PROBLEM

As we all know, Economics is about scarcity, about the fact that human wants exceed the means available to satisfy them. Economics is, therefore, concerned with choices, not only with how they are made by the individual agent, but also, and when we come to monetary economics, in particular, with how they are co-ordinated at the social level so that a "solution" to the Economic Problem is generated. By the word solution, we mean, not a state of affairs in which scarcity ceases to exist, but rather a situation in which goods and services are produced, distributed, and consumed in such a way that the relevant activities of each individual are compatible with those of every other, a situation in which the suppliers of various goods and services offer neither more nor less of any item than demanders will voluntarily take. Neo-classical economics is particularly concerned with the role played by prices and market mechanisms in coping with scarcity, and the General Equilibrium model that lies at the core of that body of doctrine forms the basis of strong claims about the effectiveness of such mechanisms. That model purports to show that, in a competitive market economy, knowledge only of his own tastes (technology too if he is running a firm) and of the prices of goods and services, is sufficient to enable, indeed to ensure, that the typical agent will act in such a way as to contribute to a coherent overall solution to the Economic Problem.

If it is accepted that the information requirements specified by the General Equilibrium model are sufficiently modest that they can in fact be met, then it is but a short step to defending market mechanisms as a

practical means of solving the Economic Problem in the real world, as well as in the imaginary world of the economic theorist. It is uncontroversial that, in the absence of a monetary system, market mechanisms would founder upon problems of acquiring and processing information. To begin with, if there were no commonly used unit of account, individual agents would find the communication and processing of information about relative prices, if not entirely impossible, then at least extraordinarily cumbersome, for anything but a very small number of items. If some arbitrarily chosen good was used as a numeraire, so that individuals could comprehend relative prices well enough to make coherent choices, the problem of carrying out the trades implicit in those choices would nevertheless be insurmountable in the absence of a generally acceptable means of exchange. Each individual would need to find out who had what to exchange for his own offerings before any trade could take place, and market mechanisms do not spontaneously generate and transmit such information to agents. (Brunner and Meltzer (1972), Ostroy and Starr (1974), Jones (1976) and Neihans (1978) have all analysed aspects of these problems.)

The existence of money in its role as a generally utilised means of exchange enables acts of sale and purchase to be carried out at separate times and places. Hence, for all practical purposes it is the existence of money that makes multilateral trade possible, not least by making it feasible for some agents to act as specialist traders in particular commodities, or groups thereof. Moreover it is surely natural that the prices of those items that get traded should be quoted in terms of whatever it is they are to be exchanged against. Hence money, the means of exchange, also becomes the unit of account, the numeraire whose existence

makes the processing of relative price information by individual agents feasible.

To say all this amounts to saying that a monetary system is a social institution every bit as necessary to the operation of markets as is, for example, a system of property law and the mechanisms for enforcing it. However, we do not usually pay any explicit attention to the legal system when we analyse the way in which markets allocate resources and distribute income, and in a wide variety of cases this does not seem to do too much harm to the empirical content of our analysis. Thus to say that General Equilibrium analysis frequently pays no attention to the role of money in making the operations of markets feasible, though it may be true, is not necessarily to advance a damning criticism of that body of theory and the insights it yields. It may be that the existence of money enables the informational problems to which we have alluded above to be solved without in any other important way rendering the outcome of market processes different from what they would have been had those informational problems not existed in the first place.

A world with money cannot be literally identical to a world without it. When neo-Classical theory treats a money economy as essentially the same in its structure as a barter economy (or at least a barter economy in which the information costs we have just alluded to are, for some unspecified reason, negligible) it asserts that the presence of money in the economy makes no more difference to the way in which it allocates resources and distributes income than does the presence of any other extra good in the array among which agents choose. From the point of view of the analysis of the choice making behaviour of the typical agent acting in isolation, what Patinkin (1965) called the individual experiment, it is

difficult to argue with the claim that to bring money into the picture makes no essential difference, or at least I would not wish to do so. Once the relevant object of choice is recognised to be "real balances", money measured in constant purchasing power units, and once the durability of real balances is taken account of, the individual agent's demand for money can be analysed along with his demand for everything else, and the amount that he chooses to hold emerges from the interaction of his utility function with a budget constraint, just like the quantity of anything else.

The characteristics of money that might set it apart from other objects of individual choice only become important in market experiments. To begin with, the equilibrium quantity of real balances in the economy as a whole is always demand determined. In the typical case of token money - be it pure fiat or credit based is irrelevant - whose nominal quantity is exogenously fixed, this means that the quantity of real balances is changed by altering the price of goods in terms of a nominal unit of that token money. Closely related, a change in the relative price of nominal money is not accomplished in the same way as a change in the relative price of something else. A change in the relative price of a particular good can be brought about by a change of its nominal price in terms of the unit of account. Where nominal money itself is the unit of account, an alteration of its relative price, and hence a change in the quantity of real balances, will be accomplished by engineering equiproportional changes in the accounting prices of everything else.

I have deliberately put the arguments of the last paragraph in tentative terms. Though I shall argue in this paper that these two characteristics of money make a money using economy crucially different from a frictionless barter economy where there exists an object of choice that

happens to be called "money", there are those who would deny this proposition. In particular, a group of economists, prominent among whom are Robert E. Lucas Jnr., Thomas Sargent and Neil Wallace, and Robert J. Barro, to whom I shall refer in this essay as "neo-Austrians" because of the similarity of their views to those propounded in the 1920s and 1930s by Ludwig von Mises and Friedrich von Hayek, argues that the behaviour of real world economies may be interpreted "as if" they were continually in a state of general competitive equilibrium in all markets. As I have already hinted, this latter proposition seems to me to be inconsistent with certain apparently well established facts. In order to make this case, I shall first of all give an account of the arguments which seem to support the neo-Austrian's position, and then show why the facts in question appear to refute those arguments.

II

SAY'S LAW AND UNEMPLOYMENT

The General Equilibrium model is highly abstract, a fiction, but nevertheless a fiction that might capture enough of reality to be relevant to the world we inhabit. It pictures an economy made up of self interested individuals, each endowed with a particular bundle of goods, including perhaps the ability to perform labour services, and of assets, including money, as well. It then addresses questions about whether and how the decisions to produce, consume, and trade of those individuals can be so co-ordinated as to be in complete harmony with one another. The answer given to the first question is that decisions can be co-ordinated because there usually exists at least one (and probably more) set of prices at

which all markets will clear, at which there will be zero excess demand for everything, at which, in other words, the plans of all agents are mutually compatible. If that set of prices rules, then the activities of self interested individuals will, as they respond to those prices, result in a solution to the Economic Problem.

The key point here is that those individuals must respond, not just to any old array of prices, but to their "market clearing" values. If trade takes place when prices are not at market clearing levels, then there will emerge excess supplies and demands for particular goods and services; the plans of individuals will not mesh with one another; there will be actual shortages of some goods, while others will go begging for buyers. In the case of labour services, a state of excess supply will involve those services being wasted, and in the perfectly reasonable sense that a scarce resource is not being devoted to the satisfaction of some human want or other, an excess supply of labour is a clearcut sign that the market mechanism has failed to solve the Economic Problem.

The Classical Economists who were not equipped with a formal analytic apparatus that in any way resembled our contemporary General Equilibrium model were nevertheless well aware of these issues. The majority of them, although of course there were dissenters (see Corry (1959)), drew a sharp distinction between the existence of gluts and shortages of particular types of labour and commodities, which they regarded as quite possible, and that of a general over (or under) supply of goods and services, which they found inconceivable. For them since every offer to sell a quantity of a particular good or service was also an offer to buy something else in exchange for it, "supply created its own demand" and the problem that markets sometimes failed to solve was that of bringing willing buyers and sellers together,

not that of ensuring that there was sufficient demand in the aggregate to ensure that there existed a willing buyer for everything that was supplied.

The proposition just discussed is usually known as "Say's Law". The peculiar characteristics of money as an object of choice that I noted above, namely that the quantity of real balances can be adjusted by a change in the price of nominal money, and that this in turn requires a change in the money price of every other item being traded, mean that its truth in the context of a money using economy cannot be defended on purely logical grounds. What if the structure of prices is such that, in aggregate, agents want to hold more real balances than currently exist? In that case, as J. S. Mill stated clearly as long ago as (1844), there will indeed be a general over-supply of commodities and services, including labour services, and scarce resources will be wasted for so long as this excess supply persists. To claim that such a state of affairs cannot as a matter of logic occur is to deny that one can conceive of the existence of an excess demand for money, and hence to deny that money is an object of choice for the individual agent. It is thus, as Lange (1942) and Patinkin (1965) argued, to deny the possibility of having a monetary theory at all within the neo-Classical framework.

To entertain the logical possibility of some effect is not the same thing as asserting that it will be of importance in practice. On the contrary, it is the essence of a scientific proposition that it denies the empirical relevance of some event or events that are logically possible. The more that is ruled out the better, for then the stronger the predictive power of such a proposition and the more easily it is tested. Say's Law may be formulated to say, not that general excess supply in the economy is

logically impossible, but that as a matter of fact it never occurs, or at least never persists long enough to matter. This version of Say's Law forms the foundation of what I have called neo-Austrian Economics.

If there never exists a general excess supply or demand for real balances, that must be because the price of nominal money is always at an appropriate level. Except in the uninteresting, empirically irrelevant (and very un-Austrian) case of an equilibrium price structure that never has changed nor ever will need to change, this in turn means that the money prices of individual goods and services are free to vary "sufficiently rapidly" to maintain this state of affairs. In formal presentations of General Equilibrium theory, prices are pictured as being set by an entity, the auctioneer, who is not part of the economy under analysis and consumes none of its resources. Moreover the process of adjusting prices takes place in a "meta time" in which the activities of production, consumption and trading are suspended until a structure of market clearing prices is achieved by way of a tâtonnement process.

The key characteristics of the tâtonnement process are that, on being faced with a set of prices, every agent submits his quantity plans to the auctioneer, who in turn fixes a new array of prices, the process continuing until a set of prices at which all quantity plans are compatible is achieved. "Unrealistic" though the analysis is, it is not without interest, because it turns out that the simple instruction to the auctioneer to raise the prices of goods in excess demand and lower those of goods in excess supply will ensure that he does indeed eventually arrive at a set of market clearing prices in all but a few exceptional cases which it is customary to treat as unimportant. If the auctioneer treats nominal money as the numeraire, then the emergence of an excess demand for real balances during the tâtonnement leads him to lower the

money prices of all goods and services until that excess demand has been eliminated. This lowering of goods prices raises the quantity of real balances, and hence serves to eliminate the excess demand for money. The auctioneer, in effect, presides over the operation of a "real balance effect", which does not manifest itself as part of the trading process. In the General Equilibrium model, production, consumption, and trading, only take place subject to a set of prices at which Say's Law is satisfied.

No one takes the foregoing story literally. However, it can be argued that, in the real world, those who cannot sell all they want to sell do in fact tend to lower its price, and that those who want to reduce their sales do in fact raise the price they ask. It has been shown by Howitt (1974) that an economy in which prices are set by specialised traders who respond only to the excess supply and demand for their own particular commodity will operate "as if" presided over by an auctioneer. How close to a "complete" description of reality - whatever that may be - an economic model must come before one ceases to feel uncomfortable about its "lack of realism" is a matter of taste, but this result surely enables the proponents of General Equilibrium theory to defend it against many attacks along these lines. To postulate the auctioneer may be a convenient way to show how a market solution to the Economic Problem can be generated, but he is not necessary to the generation of that solution. Thus his manifest absence from the real world is not, in the light of Howitt's analysis, conclusive evidence of the practical irrelevance of the General Equilibrium model.

Needless to say, Howitt's analysis does not guarantee the relevance of the General Equilibrium model either. One must refer to empirical evidence and not just to a priori argument to deal with such a question.

Over the last couple of hundred years, economies which rely heavily on market mechanisms have operated close to "full employment" for a sufficiently high proportion of the time to enable neo-Classical economists to argue that real world markets, even the labour market, do tend to clear in a fashion akin to that described by the General Equilibrium model.

However, unemployment, sometimes on a massive scale, has turned up regularly in all market economies as a temporary phenomenon, where temporary is an adjective that covers years and even decades, rather than weeks and months. This fact is frequently cited as prima facie evidence that, although the General Equilibrium model may be of some long run relevance, it is far from complete as an account of how market mechanisms work to solve the economic problem in the real world.

The argument here is usually put as follows: if markets, including the labour market, always clear, then there cannot be such a thing as involuntary unemployment; therefore the very existence of such a phenomenon refutes the hypothesis that markets do indeed always clear. Not the least of the contributions made by the neo-Austrian economists to the development of economics has been to point out to us that the adjective "involuntary" refers to the outcome of an agent's activities relative to his intentions and to remind us that the fact that a man is unemployed tells us nothing whatsoever about his intentions. Moreover, they have gone on to show that they can explain observed unemployment in terms of a model in which it is the intended outcome of freely made choices. In doing this, they have not merely suggested that the conventional interpretation of unemployment might be faulty, but have quite explicitly asserted that it is. They have, as I have said earlier, propounded the empirical version of

Say's Law as a fundamental basis for economic theory and have argued that it is compatible with available evidence.

III

NEO-AUSTRIAN BUSINESS CYCLE THEORY

It should go without saying that the fact of unemployment cannot be reconciled with the conventional version of the General Equilibrium model. Some modifications have to be made to it, and those that the neo-Austrians make have to do with the assumptions about the nature of the information available to agents. The usual version of the model is based on two propositions: that market clearing prices always rule; and crucially, that all agents have knowledge of the values of all prices before they execute any decisions about quantities. In constructing an explanation of unemployment, the neo-Austrians maintain the first assumption, and hence Say's Law, but drop the second. The details of the analysis differ from exposition to exposition, as one would expect with a body of doctrine still under development, but the following account of what is involved is not, I hope, misleading in any way. It is based largely on my reading of Lucas (1972, 1975, 1977, 1980) and Sargent (1976).

To begin with, the world that the neo-Austrians analyse is not stationary any more than that of their Austrian predecessors was. Tastes are not given for ever, nor is technology; people leave the labour force, newcomers enter it; and so on. One result is that the market-clearing structure of relative prices is in a constant state of flux, so that agents are continually having to renew their stock of information about such prices. Crucial to neo-Austrian arguments is the proposition that agents

must devote resources to generating such information. In particular, agents' stock of information about the structure of wages is thought of as depreciating if resources are not devoted to maintaining it; and for some agents at least, the generation of information about wages is posited to be a specialised activity so that to engage in it precludes working. Agents engaged full-time in generating for themselves information about wages are said to be engaged in "job search" (misleadingly since they are really seeking information about wages) and they are, beyond doubt, voluntarily unemployed. The relevance of this line of reasoning to the rationalisation of what is often called "frictional" unemployment should be clear enough, and the argument proceeds to advance the hypothesis that, given the structure of any particular economy, given the way in which tastes, technology, and so forth are changing over time, there will exist a certain level of "wage search" unemployment which is "natural", which is, to borrow Milton Friedman's (1968) phrase, "ground out by the working of the Walrasian General Equilibrium System".

Not only is the neo-Austrians' world in a state of perpetual long term change, but it is also subject to a series of short-term random shocks as well, some of which affect the structure of market clearing relative prices, and some of which affect the market clearing value of the general price level. It is at this point that the crucial role of money as the numeraire of the system comes into the analysis, along with another specific and quite critical assumption about the nature of the information available to agents, namely that they learn about changes in the money prices of what it is that they sell, (in the case of households that means their labour) before they learn about the money prices of what it is that they buy, (in the case of households again, of goods and services). The

decision as to how much labour to supply in a particular occupation, however, and that includes the decision whether or not to search for a better alternative, or whether or not to carry on searching if one is already engaged in that activity, depends not upon the money wage, but upon the real wage. The availability of precise information about money wages where one is currently employed, or where one has recently "searched", in the absence of equally precise information about money prices and alternative money wages, makes it possible for suppliers of labour to make errors about their current real wage and about the one that they might command elsewhere, and therefore to make errors in their employment decisions.

According to the neo-Austrians, it is changes in the nominal quantity of money that typically initiate output and employment fluctuations, and in order to appreciate fully the role of informational problems in their analysis, it is helpful to consider the effects, on an economy such as they postulate, of a fall in the nominal supply of money that requires an equiproportional fall in all money wages and prices to absorb it without any real effects. In the wake of such a change, households will find themselves faced with lower money wage offers. Should they to any extent misread these offers as signifying a cut in real wages, they will reduce the quantity of labour that they offer at any actual value of the real wage. If we presume that firms know both output prices and the money wage rate, and to do so keeps the analysis manageable, they will respond to this shift in the supply curve of labour by cutting back output and employment. Output prices will fall by more than money wages fall, so that real wages will rise as employment decreases. All markets will clear, and search unemployment will increase.

In due course, households will discover that they have made an error. They will find out that real wages have risen rather than, as they initially thought, fallen, and they will regret the labour supply and wage-search decisions they have taken upon the basis of this mistaken information. However, such ex post regret does not in any way alter the fact that the decisions in question were ex ante entirely voluntary. At the time when prices were formed and markets cleared in the foregoing experiment, no one who wanted to engage in wage search was prevented from doing so; no one who chose to work, at what he then (albeit mistakenly) perceived to be the real wage was unable to do so; no firm employed anything but just that amount of labour which enabled it to equate that factor's marginal product to the real wage; and no firm found any difficulty in selling just that level of output which it planned to sell at the going price. Thus, the unemployment rate increased in response to a cut in the quantity of money at the same time as money wages and prices, and their rates of change as well (relative to expectations), fell, thus generating a typical observation on a "short run Phillips curve". All this happened without Say's Law being violated.

Now what we have described so far is the way in which, in the neo-Austrian version of the General Equilibrium model, a monetary contraction, if its effects on money prices are misread as relative price changes, can cause an increase in unemployment, but we have said nothing about a key characteristic of unemployment and output fluctuations in the real world, namely the serial correlation that these variables display. As a matter of simple fact, when output and employment fall, that fall persists for a while, and when they rise, that rise is also persistent. It is not random fluctuations in output and employment that need to be explained, but the

business cycle. Broadly speaking, there are two approaches that can be taken to coming to grips with the persistence of output and employment fluctuations while maintaining the empirical truth of Say's Law but although they are by no means mutually exclusive, the neo-Austrians have, for good reasons, given the nature of their model, rejected the first of them.

The essential nature of this first approach is simply stated: unemployment departs from its "natural" level because agents, who are forced to act upon incomplete knowledge about the money prices of goods, make errors in the expectations that they form about those prices. From this starting point, it is easy to go on to argue that if unemployment persists over time, that might be because the expectations upon which people act are systematically in error over time as well. However, to go in this direction does serious violence to the spirit of the neo-Austrian approach, which is to attempt to explain the facts of the business cycle in terms of a model firmly grounded in microeconomic principles. There is no assumption more important to microeconomics than that agents are self interested maximisers.

No matter how an agent forms his price expectations if those expectations are in error; and if as a result of that error the agent is led to take decisions that he later regrets; it is quite incompatible with the maximising assumption to postulate that he will continue to use the same method of forming expectations, if by doing so he continues systematically to make damaging errors. After all, information to the effect that his errors are systematic is presented to the agent without his having to devote any resources to its collection. It arises as a by-product of his market activity. To process such information so as to modify whatever rule

was being used to generate expectations in the first place, though not quite costless, is perhaps a relatively trivial exercise. Thus, the neo-Austrian argues that, if making errors causes disutility, then a rational agent, even if he starts out making systematic mistakes, will learn about this and will stop doing so. Persistent expectational error cannot then, according to the neo-Austrian, be a permanent feature of a world populated by self interested maximisers, and ought not therefore to be used as an hypothesis to explain the persistence of unemployment.

The "rational expectations hypothesis" as originated by Muth (1961) is therefore an integral part of neo-Austrian theory. At first sight, that hypothesis, which here should be understood as the postulate that agents do not make systematic (i.e., serially correlated) expectational errors, seems to be difficult to reconcile with the existence of even random deviations of the economy as a whole from full employment. If each agent makes only random errors, why do they not cancel out as we aggregate to the level of the economy as a whole? Lucas (1972) provided the answer here. He argued that, because fluctuations in the quantity of money may be random from the point of view, not only of each agent but also of the economy as a whole, to the extent that such fluctuations induce each agent to make an error in forming expectations about prices, and hence in making his quantity decisions, the error in question will be common to the actions of each agent. Hence, it will have similar consequences for the behaviour of each agent, and these consequences will still be observable when we aggregate to the level of the economy as a whole. In short, random shocks which impinge simultaneously upon the whole economy have effects which are systematic across agents.

The foregoing argument does not explain why the effects of such random shocks persist over time to create the business cycle, but there is a whole array of arguments that can be pursued here, none of which is incompatible with the others, and which, taken together provide what most would regard as more than ample material for the construction of a theory of the business cycle. First of all, a genuinely random series will contain runs of values for whatever variable it is generating. The proposition that the business cycle is a reflection of purely random events is a time honoured one in Economics going back at least to Slutsky (1937). The fact that we shy away from it has got more to do with our distaste for its implication that such an important fact of economic life is inherently unpredictable than it has with any gross logical or empirical weakness in the proposition in question.

Though neo-Austrians, again like their namesakes, are relatively pessimistic about the predictability of economic events, they nevertheless do not embrace the purely random events theory of the cycle. In their work on these matters, they concentrate on the other sets of arguments. The first is essentially a refinement of their basic theory of how the economy can be moved away from its "natural" unemployment rate equilibrium while markets continue to clear. It is argued that the manner in which information about prices reaches agents is itself serially correlated (see Lucas (1975)). Instead of learning about money wages instantaneously, and all other money prices with a single delay, agents are thought of as learning about different groups of prices with delays of different lengths. Whether one regards this type of argument as plausible or not is to some extent a matter of taste. It is a rather special one, to be sure, but households do shop for food, say, more often than for durable goods, so it

is not totally without foundation in reality. Its effect is of course to introduce a systematic-over-time element into agent's expectational errors, but an element that is detectable only ex-post, and cannot be used to improve any future forecasts. The reader might note, though, that Karni (1980) has shown that the existence of an economy wide asset market would short-circuit the delays in the acquisition of information postulated here by ensuring that all relevant information was immediately incorporated in asset prices.

Whatever one might think of it, the above argument attempts to explain the business cycle in terms of deviations which are systematic over time of the unemployment rate from its natural level. Another element in neo-Austrian business cycle theory involves the proposition that the natural unemployment rate itself will vary. When the labour force misjudges the real wage, the supply curve of labour to firms shifts, and the pattern of households' demand for output also changes. This, in turn, means that the structure of output differs from what it would be in the absence of any error. To the extent that output decisions are costly to change once made, such effects will, in and of themselves persist over time. Furthermore, to the extent that mistakes are made about the production of durable goods, and notably about producers' durable goods, the quantity of factors with which labour must co-operate in production in the future will be affected, and this in turn will influence the marginal physical productivity of labour in terms of consumption and producer goods and therefore the structure of real wages. With perfect knowledge of prices, and frictionless markets, all this will only change relative prices. However, when these very Austrian considerations are combined with the assumption that knowledge about prices must be produced by devoting resources to its production,

it becomes possible that the division of household time between employment, job search, and leisure, and therefore the natural unemployment rate, will also be affected. Because durable goods take time to wear out, such effects on the natural unemployment rate, once induced by an initial shock to the economy, will persist for a while.

Now the last few pages have not given a full account of neo-Austrian business cycle theory. However, their arguments do, I trust, say sufficient to indicate that there is no great logical difficulty in extending General Equilibrium analysis to cope with economy wide fluctuations in real income and employment that persist over time, while continuing to maintain the basic assumption of that approach, namely that at every moment, all activities are the outcome of the voluntary choices of maximising agents freely exercised in clearing competitive markets. Once the basic proposition that expectational errors can lead to such decisions generating movements of output and employment away from the "natural" levels that they would take in the absence of such errors is accepted, everything else can be made to follow without too much difficulty. The key factor here is expectational error, and I have already touched upon the rational expectations notion in the above discussion. I shall now take up this hypothesis in a little more detail.

IV

RATIONAL EXPECTATIONS

As I have argued, the typical shock with which the neo-Austrian market experiment begins is a change in the nominal money supply. If such a shock immediately generated an equiproportional fall in all money wages

and prices, all markets would remain cleared at their "natural" equilibria. It is a failure on the part of agents to see that such price changes must take place, and to act accordingly, that causes a cut in the quantity of money to have real effects. For the neo-Austrian, then, the way in which agents form their expectations about the behaviour of those prices of which they do not have immediate knowledge is crucial to an explanation of the short-run non-neutrality of money.

Consider, for the sake of argument, an economy in which each agent understands the operation of the General Equilibrium system of which he forms a part; suppose that each agent knows that a market clearing set of prices will always rule, and suppose that he knows that there has been a cut in the nominal money supply, and by what amount. In such an economy, populated by such agents, no one would misread the money wage signals that come in the wake of the money supply cut. Labour markets would, in effect, clear "as if" all those involved in wage bargaining took account of the interaction of wages and prices in the aggregate economy while settling matters in their own segment of the labour market. This example might seem to be far fetched, and to be based on a much more elaborate hypothesis about the nature of the typical agent's knowledge and expectations than that which I discussed a few pages ago. However, the two hypotheses about expectations are in fact intimately interlinked as we shall now see, so that the foregoing "far fetched" story ought not to be dismissed too quickly.

The notion of "rational expectations" was said earlier to amount to the proposition that agents learn how to eliminate systematic errors when forming the expectations upon which they base their activities. Now I am talking about an economy in which each agent is equipped with knowledge of

a model of the system that is sufficiently complete to enable him correctly to forecast the effects of a change in the supply of money on the money price of whatever it is he sells so that he does not make false inferences about the behaviour of relative prices from that of those money prices. In this particular example, each agent reacts to a change in the supply of money so as to ensure that its effects are on money wages and prices alone, and not on real variables. The key question is whether agents who do no more than avoid systematic errors in forming expectations about the general price level will ever, in fact, act "as if" they had foreseen the consequences of a change in the nominal money supply. The answer is clear: they will do so when the change in the nominal money supply is itself part of a systematic pattern of behaviour on the part of that variable, a pattern whose consequences have already been absorbed consciously or otherwise into whatever formula agents in fact use to form price expectations.

The assumption that agents do not make systematic errors - the formula they use to form their expectations is, subject to this assumption, quite irrelevant - is sufficient to permit the economist analysing their behaviour to postulate that they act "as if" they understood the operation of the economy of which they form a part. So long as money supply fluctuations have a systematic component as well as a random component, it is only the latter which will have real effects. The systematic component of money supply fluctuations; "anticipated money" to use Barro's (1978) phrase, will affect only prices. This might be because agents understand that the quantity of money determines the price level and therefore find it worthwhile to use the systematic behaviour of the money supply as a basis for expectations, but that does not have to be the case. They might just

as well, for example, use information contained in the past history of the price level, which will itself reflect the consequences of systematic money supply behaviour and might well be cheaper to monitor, as Feige and Pearce (1976) argued.

This does not mean that the two versions of "rational expectations" always yield the same implications. A crucial difference would arise if the nature of the systematic component of the money supply's behaviour were to change and if that change was announced. If agents really did understand the economy's operations, they would adapt at once to an announcement of such a change, (here I beg the question of the credibility of the announcement) and the change in question would have no real effects. However, if agents did not understand the economy's operations, they would have to learn about the changed regime by making systematic errors, recognising them as such, and eliminating them by some unspecified trial and error method. While they were learning, the new policy regime would, albeit temporarily, have real effects.

The "agent will eliminate systematic errors" version of rational expectations, which is after all the a priori plausible form of the hypothesis, does not say anything concerning how quickly agents will learn about a change in the policy regime and then act upon that new knowledge. It should not therefore be advanced as the basis for the argument that a quick attack on inflation by monetary policy, if only it is pre-announced, will be effective and have no real side effects. The latter prediction follows from the more narrowly formulated "agents understand the working of the economy" version of the hypothesis and that is a much less plausible version of it. Moreover, the prediction in question also requires that the announcement of a change in policy regime be believed by agents, and the rationality hypothesis tells us nothing either for or against the likelihood that this will be the case.

These matters are something of a side issue here. The key point as far as this essay is concerned is that fluctuations in the supply of money whose effects on prices are not anticipated will have real and persistent consequences for an economy made up of competitive markets that always clear. The neo-Austrians are quite right about that; and in claiming that this result is relevant to the real world, they offer a very different account of the business cycle to that which is familiar to those brought up on the macroeconomics, of the 1950s and 1960s. Neo-Austrian theory is coherent and does deserve to be taken seriously but that does not mean that it is correct, as I shall now begin to argue.

V

WAGE AND PRICE STICKINESS

The neo-Austrian approach to the analysis of the business cycle is, as I remarked at the end of the preceding section of this paper, very different from that implicit in orthodox macroeconomics, and the difference in question lies, not in the assumption of rational expectations, important and fruitful though that notion is, but in the maintained hypothesis that prices always move so as to keep supply and demand equal to one another in all markets. It is by now widely agreed that much of the novelty of Keynes's economics, as set out in the General Theory, lay in postulating first, that prices and particularly money wages, do not move sufficiently rapidly to keep markets cleared, and that, in the absence of sufficient price flexibility, quantities adjust instead to equilibrate markets. Thus, output fluctuations take place, not because of wage and price fluctuations, but instead of them.

Patinkin (1965), Clower (1965), Leijonhufvud (1969), Barro and Grossman (1975), and Malinvaud (1978) have all contributed to showing that, given the assumption of price stickiness, such phenomena as underemployment "equilibrium", and the multiplier process are quite compatible with the behaviour of maximising agents. They have thus provided a link between the microeconomics of General Equilibrium and orthodox Macroeconomics. It is to miss the point of their work to criticise it as does Kantor (1980) for having failed to produce new empirical predictions, because what that work does is show that the abundant supply of predictions, tests, and what have you, that already exists in the published literature of macroeconomics, is compatible with the microeconomic postulates of utility and profit maximisation. However, the hypothesis of price stickiness is required to establish this compatibility, and the work in question is undoubtedly vulnerable to the criticism that it has not produced a foundation in the theory of maximising behaviour for this hypothesis.

Some commentators on Keynesian economics, for example Leijonhufvud (1969) stress interest rate stickiness rather than wage and price stickiness as a source of output fluctuations, but the difference between what they argue, and the points that I am making here is one of emphasis rather than of kind. In this paper I am considering the ways in which the economy does and does not respond to a cut in the nominal money supply. Leijonhufvud is concerned with the ability of the interest rate mechanism to maintain the equality of savings and investment at full employment in the face of a fluctuating marginal efficiency of capital. An interest elastic demand for money, which does of course have a firm foundation in microeconomics, means that interest rate movements alone cannot accomplish this if the nominal money supply is held constant. The price level also has to vary in

order to provide the quantity of real balances which the economy will want to hold at the new full employment equilibrium value of the rate of interest after the marginal efficiency of capital has changed. If wages and prices were perfectly flexible, this would be accomplished instantaneously, and fluctuations in the marginal efficiency of capital would lead only to interest rate changes and not to fluctuations in real income and employment. Here too, then, the theoretically arbitrary assumption of price stickiness plays a vital role in the analysis.

Of course, neo-Austrian economics does not provide a foundation in maximising behaviour for its assumption of complete price flexibility either, and to this extent its handling of this matter is just as arbitrary as any other. However, price flexibility is the common assumption made in applications of the General Equilibrium model, and in this sense the neo-Austrian approach to macroeconomic issues is closer to micro theory per se. Moreover, empirical applications of conventional macro-theory typically have money wages and prices fluctuating as a function of "excess demand", the latter being proxied by some output or employment measure, with the values of the parameters governing the fluctuations in question left free to be determined by the data. To the extent that the neo-Austrian model can deal with the same data while maintaining a priori that the parameter in question is infinite in value, it is a simpler, and in that sense a "better" model.

Some neo-Austrians, notably Barro (1979) have gone further than this and argued that the hypothesis that markets do not clear is incompatible with the basic assumption of economics that the world is populated by self interested agents who will always engage in mutually advantageous trades. If Howitt's (1974) analysis of price formation in markets

dominated by inventory holding specialist traders was universally relevant, it would be hard to disagree with this claim, and indeed Howitt (1979) has argued that in such a world the distinction between clearing and non-clearing markets reduces to a matter of semantics. However, in the real world, not every market is so dominated, and in particular the labour market is not. The latter is, to use Hick's phrase, a "fix-price" market, as opposed to a "flex-price" market. In a flex price market, so the argument goes, knowledge that enables a particular trader to foresee the time path of the market clearing price more accurately than his competitors enables him to make extraordinary profits. Hence, it is worth his and every other trader's while to invest a considerable amount of resources in generating that information. Therefore, if the market is competitive, the rate of return on resources devoted to generating and processing information is driven to a "normal" level, the quality and quantity of available information is "high", and actual prices are continuously "close" to their market clearing levels.

Labour markets are not usually dominated by specialist traders. Typically, the level and structure of wage rates are fixed on a piecemeal basis by the decentralised activities of individual workers, or their representatives, and individual employers, or their representatives. For those involved in agreeing on a particular wage rate in a particular sector of the economy, the cost-benefit ratio for generating information about the market clearing structure of wages is likely to be relatively high, since there is no way of exploiting small increments to information by speculating on margin in the labour market. Furthermore, even when the market clearing wage rate changes and is perceived to have changed, it is not necessarily in the interests of everyone concerned in the wage fixing

process to work towards an actual change in wages. For example, if the market clearing wage falls, those currently employed have no immediate interest in seeing their own actual wage rate cut. The logic of Barro's argument would seem to imply that, to move from a situation of excess supply of labour to one of full employment is in everyone's interest, so that those who are in employment have as much at stake in seeing the wage go to its market clearing value as anyone else. It is certainly true that in moving from a situation of unemployment to one of full employment, it is possible to make everyone better off, but it does not follow that the actual move will, in fact, have this result.

To put the case explicitly in the language of elementary General Equilibrium theory, for any point within the production frontier, there exists at least one Pareto superior point on that frontier; but not every point on the frontier is Pareto superior to any point inside it. Thus, members of the labour force who remain employed when there is an overall excess supply of labour may be perfectly correct in suspecting that to accept a wage cut will involve them in facing a lower real income even when full employment is restored. Hence, if they are self interested and rational, they will resist the tendency of wages to fall. To be sure it is in the interests of those who are not employed, and of their potential employers, to attempt to bid wages down in these circumstances. However, one does not have to follow Hicks (1974), who abandons the assumption of self interest and invokes the hypothesis that the spirit of "Fair play" leads them to be at best half hearted in their attempts to do so, to argue plausibly that, in the absence of an auctioneer, or of a group of specialist labour brokers, the resistance of what will usually be the majority of the labour force might lead to those efforts bearing fruit only rather "slowly".

I have used the word "wages" in the last few paragraphs without attaching to it the adjectives "real" or "nominal", but it should be clear that, where money is the unit of account, all wage bargaining has to be about the money wage, even though its ultimate aim is to achieve a particular real wage. Moreover, where the labour market is not centralised, and money prices and their expected future behaviour appear as exogenous variables to those involved in the wage bargaining process, any attempt to lower money wages - or their rate of change - must appear as an attempt to influence real wages. Thus, even when an economy is subjected to a purely monetary shock, so that the market clearing value of the real wage is not changed, the considerations we have been discussing are relevant. Of course if wages were, literally, set by an auctioneer who would permit no trade to take place until a market clearing set of wages and prices had been achieved, this problem would not arise. However, the question we are addressing here is not how the world would function if an auctioneer was at work, but whether it would function in the same fashion in his absence, and in the absence of what Howitt's analysis seems to imply would be a substitute for his activities, namely a market in labour services dominated by specialist traders.

It might be argued that, in the wake of a cut in the nominal money supply, if each agent understood that no real wage changes were going to result from the acceptance of money wage changes, because every other agent was expected to cut money wages and prices at the same time, the market would quickly clear. It would indeed do so, and clear at the natural unemployment rate as well, because the assumptions about information that I have just made describe a state of affairs in which the monetary shock in question has been "fully anticipated". However, the neo-Austrian

model requires that markets in general, and the labour market in particular, also clear when monetary changes are not fully anticipated. It requires that, in the presence of systematic misapprehension about how the structure of wages and prices is actually changing, each wage bargain that gets struck is nevertheless consistent with an overall structure of prices and wages that will equate supply and demand in all markets. That model would therefore seem to require each agent to understand the nature of the misinformation ruling everywhere else in the economy, and to allow fully for its effects in his own wage bargaining.

The condition that everyone have full information about everyone else's misinformation is to say the least odd, and not one that could literally be fulfilled in practise, but of course there is no a priori argument that can prove that the world will not nevertheless operate "as if" it holds true. Thus, the above reasoning cannot be claimed as showing that the neo-Austrian model is false, but only that its a priori plausibility should not be defended by appeal to the propensity of rational agents to engage in all trades that are perceived to be mutually beneficial. It is not the basic propensity of economic agents to act in this way that is questioned by the critics of the neo-Austrian approach, or at least by this critic, but their ability quickly to perceive just what menu of trades is in fact open in a monetary economy where multilateral and not isolated bilateral trading is of the essence. What is at question is not the maximising propensity of self interested agents, but the capacity of real world markets to provide sufficient information always to harmonise their behaviour, or to put it another way, the empirical validity of Say's Law.

Now some might argue that the foregoing discussion is, in large measure, beside the point, because even casual observations of the real world show us that wages and prices do indeed change rather sluggishly in response to market forces. This argument, however, will no more do than will the closely related argument, already discussed, that refers to the observed fact of unemployment. We must not confuse the facts that we observe with a particular theoretical interpretation of those facts, and in this instance, we must recognise that it is now a commonplace of the literature that has grown from the original contributions of Gordon (1974), Azariadis (1975) and Baily (1974) that money wages may be modelled as being set by rather long term contracts which are themselves the outcome of a completely rational bargaining process. It cannot be inferred, from the fact that under the terms of such contracts money wages do not change with any great frequency, that labour markets do not operate "as if" they cleared continuously. Barro (1977) in particular has argued that if rational agents do engage in contracts, then the contracts themselves will contain clauses that enable appropriate responses to be made to whatever shocks, systematic or random, might reasonably have been expected to occur during the lifetime of the contract at the time it was struck.

The wage stickiness associated with long term contracts, under which the wage rate cannot plausibly be thought of as reflecting, at any particular moment, the marginal productivity of labour, and the apparently closely related phenomenon of fluctuations in employment brought about by lay-offs, is not necessarily incompatible with competitive maximising behaviour on the part of both parties to such contracts (see Hall (1980)). If employees are more risk-averse than their employers, then there will be an element of insurance in the wage bargain they strike; wages will be more

stable over time than the marginal product of labour; and, when that marginal product falls below a certain threshold level, employment will be reduced not by the typical employee quitting in response to a wage cut, but by that employee instead being laid off. Thus the appropriate market clearing quantity is achieved without an intervening price signal being observed.

I find it awkward to reconcile such analysis with the underlying neo-Austrian hypothesis about the nature of the business cycle. The analysis is plausible enough at the partial equilibrium level, but the explanation of the business cycle requires that its results so through in General Equilibrium as well. The fundamental thrust of the neo-Austrian approach is to argue that the quantity fluctuations which we observe over the course of the cycle are generated by markets that clear, while the fundamental thrust of the contract literature is to argue that the quantity decisions that get taken, in labour markets at least, (the analysis is surely applicable to certain output markets too) involve quantity solutions being achieved without the intervention of price signals. If one is to extend a proposition such as this from a single market to the whole economy, or a large segment of it, he must explain how the information upon which quantity decisions get made is disseminated, if it is not by prices. This is not to argue that, if prices do not fluctuate in accordance with current conditions of supply and demand, then quantity decisions do not get made, or that those decisions will not, from the point of view of the immediate parties to them, be maximising decisions. However, it is to argue that it is not immediately obvious that such decisions will be mutually compatible across the economy as a whole when prices no longer act as a means of co-ordinating them. If they are not mutually compatible then of course the empirical

version of Say's Law will be violated.

But once again, this argument is an a priori one; things might not work out as the neo-Austrians say they will, but then again they might. We are in effect arguing here about assumptions, and though that can often clarify just what the issues are in any debate, it cannot in and of itself settle anything. The phrase "as if" is always available as a defence.

VI

SAY'S LAW AND THE DEMAND FOR MONEY

The reference to the phrase "as if" with which the last section of this paper ended was not intended as sarcasm. Our models, those in which we believe as much as those about which we have doubts, are after all models they are not descriptions of reality. They always do leave things out and hence always do rest upon the often unspoken premise that the world operates "as if" the factors that have been omitted are irrelevant to the outcome of whatever situations the model makes predictions about. However, it is the model itself, and not the economist who manipulates it, which determines what predictions are relevant to testing it. If a set of assumptions yields a conclusion that is false, even if that conclusion concerns some factor that was of no interest to those who put together that the set of assumptions in the first place, then there is no alternative but to conclude that the set of assumptions in question is unsatisfactory and needs improving. This is not to say that a model which is in some way refuted must be discarded altogether, because a faulty model is not necessarily useless and may in any case be the best available to us at any time; but, to repeat, it is to say that the model cannot be regarded as satisfactory.

When it comes to macroeconomics and the business cycle, we are faced with (at least) two competing approaches. As things now stand, there is a strong case to be made for one of them, the neo-Austrian approach, on the grounds that it is simpler than its "Keynesian" alternative, in the sense that it leaves at least one fewer parameter to be determined by the data, but also, and crucially, on the grounds that it has at least as much explanatory power as does the alternative framework. This is the main thrust of Lucas's (1980) argument. The last section of this paper discussed certain aspects of labour market behaviour and concluded that there may be difficulties with the explanatory power of the neo-Austrian approach after all, but "may be" stops a good way short of "are", and our knowledge of facts and theory alike in this area seems to leave matters open. Whether or not labour markets work "as if" they cleared continuously in accordance with the predictions of competitive theory is a central question in the debate between the neo-Austrians and their critics. However, it does not follow that we are compelled to rely on the labour market to provide us with evidence about these matters.

The reason for this is inherent in the very nature of General Equilibrium theory, where any one market interacts with all the other markets in the system. If something is going wrong in the labour market, it will manifest itself not only there, but in some other market or markets as well, and perhaps in a way that will make it easier to see that something is indeed wrong. In this case, I shall now argue that it is possible to make inferences about whether the labour market clears from what happens elsewhere in the economy, and in particular in the market for real money balances, about which we have a good deal of theoretical and empirical knowledge. Specifically, I shall argue that this knowledge, if indeed

it is valid, suggests that the neo-Austrians theory of the business cycle, in its insistence on the empirical validity of Say's Law, is almost certainly unsatisfactory in the sense that it makes predictions that are contradicted by the evidence.

The behaviour of the demand for money is of particular relevance to judging the validity of neo-Austrian business cycle theory for a number of reasons. First of all, the typical shock that sets the cycle in motion in that theory is an unanticipated change in the nominal money supply. Second, as I pointed out explicitly above (p. 4) elementary monetary theory tells us that, when the nominal money supply is exogenous, the money market clears by the general price level moving so as to equate the supply of real balances to the demand for them, while the price level in its turn can only be changed if the money prices of all goods in the economy vary. These simple facts immediately make it difficult to reconcile neo-Austrian theory with the existence of any wage-price rigidity induced by long term contracts. It cannot be valid to say that, in the presence of such contracts, and in the face of an unanticipated change in the money supply, the quantity decisions taken by firms and households in the absence of price changes are the same as those that would have been prompted by an auctioneer manipulating prices so as to keep markets cleared because, in the absence of the appropriate price changes, the supply and demand for money cannot be brought into equilibrium.

The above argument is suggestive, surely, but it is not in and of itself convincing, because after all, in the real world, wages and prices do vary to some extent, and who is to say that the variations that we actually observe are not "appropriate" to clear the money market? In order to answer this question we need to look more closely at the literature

on the demand for money function. There we find that in order to deal in a satisfactory way with the data that the world generates for us, it is necessary to distinguish between the "long run" and the "short run" demand for money. This is true, at least, unless those data are highly aggregated over time, to cycle phases for example, but we obviously need a lower level of time aggregation than that in our data if they are going to be able to tell us anything about the business cycle.

There is no need here to go into detail about the long-run-short-run distinction here, for I have already discussed the issues involved elsewhere (see Laidler, 1976, 1980, 1981). Suffice it to say that, in order to find "stability" in the demand for money function, using annual or quarterly data generated over relatively short (thirty years or less say) periods of time, a lagged dependent variable seems to be needed. Suffice it also to say that, in a world where the nominal money supply is exogenous, and that is after all the neo-Austrian world, it is logical nonsense to justify the presence of such a variable on the grounds that the nominal money supply adjusts with a distributed lag to variations in the arguments in the demand for money function. Nominal money is either exogenous or endogenous, and it cannot be both. That leaves two ways of accounting for the presence of the lagged dependent variable in the function.

The first of these involves postulating the existence of "expectations lags" usually based on an application of the error learning hypothesis to the modelling of permanent income (on this, once more see Laidler (1976, 1980, 1981)), but this will not do in the current context. First, the hypothesis in question does not seem to be entirely adequate in the face of the data, but second, the neo-Austrian who is devoted to the notion of rational expectations can hardly invoke the error learning

hypothesis, which on all but the most special assumptions implies that agents make expectational errors that are systematic over time, in order to explain any empirical evidence. The only explanation for the presence of a lagged dependent variable in the aggregate demand for money function that is left, then, is that first suggested by Walters as long ago as (1965) namely that it reflects the slow adjustment of real balances, and therefore of the general price level towards their long run equilibrium value, rather than a slow adjustment of nominal balances.

To accept this last explanation of the presence of a lagged dependent variable in the demand for money function is, as I have argued elsewhere (Laidler, (1981)), to conclude that the "short run" demand for money function is not, in fact a structural relationship at all, but a hybrid which is part long run structural demand for money function and part price level adjustment equation, and that the coefficient which measures the speed of adjustment is picking up, not the consequences of the costs that face individual agents trading in asset markets, but of the real balance effect operating on prices. If this interpretation is accepted, it ceases to be a puzzle that money market adjustment, so-called, is extremely slow, for it would imply not that agents rearrange their portfolios slowly, but that in the real world the real balance effect works only slowly on prices. If the literature on the labour market provides us with all sorts of reasons to believe that money wages, and therefore perhaps prices, might display considerable sluggishness in moving towards market clearing levels in the face of a monetary shock, then empirical work on the demand for money function seems to provide us with a great deal of evidence that is consistent with that postulate.

The implications of the foregoing interpretation of the empirical evidence on the demand for money for neo-Austrian economics are profound, for they tell us that, far from being so flexible that they can keep markets continuously cleared in the face of fluctuations in the nominal money supply, prices take years to adjust to such fluctuations. If they do, if the working out of the real balance effect on prices is a significant fact of actual economic life, rather than a phenomenon that takes essentially no time at all, then we have ample time for the quantity variations, upon which the alternative non-clearing-market approach to the business cycle concentrates, to come into effect. I am here claiming that it is almost impossible to reconcile the neo-Austrian approach to the analysis of the business cycle with the evidence I am citing. The qualifying adverb is necessary because, with sufficient ingenuity it might be possible to construct a form for the long run demand for money function which accomplishes such a reconciliation, but as we shall see the form in question is probably sufficiently far fetched not to merit serious consideration. Before we get to this matter however, there are a number of more direct objections to the position I am advancing that need to be faced and dealt with.

Perhaps the most obvious of these objections would start from the reasonable premise that, in the individual experiment on the demand for money, the agent who for one reason or another has too much cash on hand does not attempt to move all the way back to his long run equilibrium if he faces transactions costs. It might seem to follow that, in the market experiment, we should not expect to find a quicker response. If each individual taken singly wants to restore his cash balances to equilibrium only slowly, then why should not all of them, acting collectively, achieve that end through markets that nevertheless remain continuously cleared.

The answer here lies in the fact that the transactions costs that face the individual are irrelevant in the neo-Austrian market experiment, for there, real balances are adjusted by changing the price level and not by any act of trading.

Now of course, if individual prices, not to mention money wages, are sticky, then real balances will in any event adjust only slowly, but it is the very essence of the neo-Austrian approach to argue that prices and wages are not sticky. Thus, in the market experiment prices change because there is an excess supply of money, and each agent finds his money holdings moving towards equilibrium as a result of a force that to him appears exogenous. He does not incur any transactions costs as a result of this adjustment, and will still find it worthwhile to attempt to incur such costs in order to move that bit closer to long run equilibrium. When every agent does this, the price level must continue to rise, and the supply and demand for money will not be in equilibrium until any discrepancy between actual, and long-run desired cash balances has been removed.

The result here is essentially similar to that which we get from applying the Archibald Lipsey (1958) analysis of the dynamics of the real balance effect to the market experiment; there too a process which at the level of the individual agent would be spread out over a number of periods, strictly speaking an infinite number since approach to equilibrium for the individual is asymptotic, when all agents are acting together is accomplished instantaneously by the auctioneer adjusting prices to keep the market cleared. The matter can be put succinctly in terms of the behaviour of prices in a market presided over by an auctioneer. So long as there is any positive (negative) discrepancy between actual and

long-run desired real balances, the plans of each agent involve him in being a net seller (or buyer) of real balances, and hence a net buyer (or seller) of goods and services even if only for a fraction of the discrepancy that underlies the plans. Thus, the auctioneer will be forced to adjust prices until the discrepancy in question is removed and the economy is placed in its long run demand for money function. Only then will trade be permitted to begin.

In short, if we neglect the distribution effects discussed below, if Say's Law holds as an empirical proposition, and if the nominal money supply is an exogenous variable, it is impossible to observe the real balance effect working out over time because the economy is always on its long run demand for money function. This, of course, does not preclude the possibility of prices moving systematically over time in response to a change in the money supply. If output responds to an unanticipated increase in the money supply by rising, as neo-Austrian theory predicts, and if that rise persists for a while, then, if current income is an argument in the long run demand for money function, prices will not move instantaneously to a new higher long run equilibrium level and stay there. However, these real income variations should already be captured by the presence of that variable on the right hand side of the long run demand for money function, and if its influence on real money holding is properly specified in the form of the long run relationship, there should be no room for a lagged dependent variable to pick up any inertia in the behaviour of prices. A similar argument holds with reference to the possibility that interest rates may change in the short run so as to equilibrate the supply and demand for money. Only such inertia as is independent of the current behaviour of the arguments of the long run function should be

captured in the coefficient of that lagged dependent variable, and according to the logic of the neo-Austrian approach there should not be any such inertia. Indeed, we can go further than this, because, as I shall now show, neo-Austrian theory predicts not merely that the price level should display no sluggishness in moving towards its long run equilibrium value after the nominal money supply changes, but that it should overshoot that value unless the change in the money supply is fully anticipated.

It is uncontroversial that a fully anticipated change in the money supply will lead to a simultaneous and equiproportional change in the general price level, leaving the quantity of real balances unchanged. To see why an unanticipated change in the nominal money supply ought, according to neo-Austrian theory, to lead to an overshoot of the general price level, it is necessary to consider once again the manner in which prices and quantities are thought of as reacting to unanticipated changes in the money supply by proponents of that theory. Prices, it will be recalled, must change until all markets, including therefore the money market, are cleared. However, because agents know only about the prices of the items they actually sell at the time at which prices are set, they must make their quantity plans, including those about holdings of nominal money, upon the basis of expectations about the value of the general price level. We have seen that neo-Austrian theory explains the tendency of prices and output to move together in response to unanticipated monetary changes in terms of a general tendency on the part of agents to misinterpret changes in the money prices of what they sell as reflecting relative price changes rather than changes in the general price level. They do this even if they form their expectations rationally.

However, as has already been stressed above, the money market has to clear at the same time as goods and labour markets, and that is a time at which agents underestimate the general price level. Thus, unless each individual agent regards only the price of what it is he has to sell as relevant to his money holding decision, the demand for nominal balances that must be satisfied to clear the money market will be conditional not upon the actual price level, but upon the expected and underestimated price level. Even when expectations are formed rationally, the expected price level rises with, but falls short of, the actual price level when there is an unanticipated change in the nominal money supply (see Lucas (1972)). The actual price level must therefore move by more than it would need to in a situation in which agents knew its true value. The result of this must be that actual observed holdings of real balances will lie below the quantity predicted by the demand for money function when there has been an unanticipated increase in the quantity of nominal money, and above the predicted quantity when there has been an unanticipated fall in the money supply.

We have some direct evidence on this very matter. Carr and Darby (1980), using quarterly data from a number of countries, and Laidler (1980) using annual U.S. data, have both shown that there is a significant positive correlation between unanticipated nominal money, and the quantity of real balances that the economy holds. Moreover, Laidler's results were derived with the very series on "unanticipated money" that Robert J. Barro (1978) constructed and used to explain price and output fluctuations in the United States. Now the results I am citing here are vulnerable to the criticism that, in having the quantity of money on both sides of the equation, they might simply be the result of correlating the measurement error in that

variable with itself. However, if there is more to them than that, they are not very difficult to explain if one does not insist that the money market be always cleared. When money is freshly created, and if prices and other determinants of money holding have not adjusted to absorb it, it is bound simply to show up as extra real balance holdings. Indeed the latter argument is tautological, but its premise that it takes time for prices to adjust in response to a change in the money supply is not a tautology. Indeed, that very premise denies the basic proposition of neo-Austrian theory, which is therefore, inconsistent with the evidence to which I am referring here (or almost certainly so).

The qualifying phrase with which the last paragraph ended is necessary because it is always possible that the empirical results just noted are the result of distribution effects, or have been derived from an erroneous specification of the long run aggregate demand for money function. The Archibald-Lipsey-Patinkin result that, even in the presence of slow adjustment in the individual experiment, an exogenous change in the nominal money supply will lead to instantaneous long run equilibrium, only goes through if the increase in question is distributed in proportion to initial money holdings. If by some chance the distribution of new money when it is first introduced is weighted towards agents who have a relatively high propensity to hold money, then the price level will indeed adjust slowly over time towards a final equilibrium value, not because the market at any moment fails to clear, but because it takes time for market mechanisms to redistribute the money until it is once again held in proportion to initial endowments. Macroeconomists are usually cautious about putting too much weight upon distribution effects at the best of times, and here, I can think of no general reason why increases in the nominal money supply should

always initially find their way into the portfolios of those agents with a particularly strong preference for holding increments to their assets in the form of money. Nevertheless, the logical possibility of rescuing neo-Austrian economics along these lines does exist.

If we set distribution effects to one side, we must nevertheless also note that, ex post it is possible to construct a demand for money function that would reconcile the neo-Austrian model with the relevant evidence. Unanticipated monetary changes are associated with transitory changes in real income in that theory, and in this respect it is well supported by the data. If the demand for real money balances depended strongly on transitory income, and if this term was omitted from the demand for money function used to interpret the data, then there might indeed appear to be more real balances being held than the demand for money function explained, and it might indeed be the case that the inclusion of transitory income in the function, with a sufficiently large co-efficient, can explain this anomaly while maintaining the rest of the neo-Austrian model intact. Barro (1978) advances just such a suggestion in order to resolve certain puzzles arising from his empirical work on fitting a neo-Austrian model to the Post War United States. Since I know of no theoretical foundation for this property of the demand for money function, I find this line of argument quite unconvincing. However, further theoretical and empirical work on the function would surely be valuable in the light of the foregoing arguments.

VII

CONCLUDING COMMENTS

This paper has covered a good deal of ground, and it would be as well to gather together the threads of argument that run through it. First, and foremost, I have argued that it is very difficult to reconcile Say's Law, considered as an empirical proposition, with the empirical evidence on the demand for money. Anyone, who wishes to maintain as a basic principle of analysis the proposition that market mechanisms in the real world operate to keep markets continually cleared "as if" they were presided over by an auctioneer, will always be able to find a formulation of the demand for money function which will reconcile this proposition with any conceivable body of evidence. However, those who regard the proposition in question as being open to empirical test will be likely to find it wanting in explanatory power in the light of the arguments I have presented. If this conclusion is accepted, then neo-Austrian economics must be regarded as probably constituting a fundamentally unsatisfactory account of the world we live in. If prices do not change quickly enough to keep markets cleared over the type of time interval that most of us regard as relevant - quarter by quarter or year by year say - then a number of things seem to follow.

First and foremost if prices do not move quickly enough to clear markets, we must ask if any other factors that will come into play as a result. Fortunately we do not have to grope for an answer to this question the way the economists of fifty years ago did. We do have Keynesian economics, as developed by Patinkin, Clower, Leijonhufvud, Barro and Grossman, and Malinvaud, which tells us that, in the absence of sufficient

price fluctuation we may expect quantities to move to clear markets instead. It also tells us that such quantity fluctuations might tend to amplify the effects of disturbances rather than damp them and therefore provides us with the basis of an alternative approach to the theory of the business cycle to that advanced by the neo-Austrians. In short, perhaps Keynes did not, after all, as some advocates of the neo-Austrian approach (see e.g., Kantor (1980)) have suggested, lead economics up a blind alley.

However, this conclusion is not one about which any Keynesian should be complacent. Though the facts seem to suggest that money wages and prices do not move quickly enough to clear markets, so that we may use the hypothesis of price stickiness as a starting point for macroeconomic analysis, we do not have anything approaching a satisfactory theory of why prices are sticky and, until we do, the predictive power of our macro-models will be seriously impaired. A body of theory that cannot predict the pace at which prices will respond to excess demand can be reconciled ex post with an uncomfortably broad range of data by letting those data themselves determine the speed of price adjustment. This neo-Austrian criticism of orthodox macroeconomics remains valid, even if the neo-Austrian solution to the problem, namely constraining the speed of adjustment to infinity a priori, turns out to be as inconsistent with the empirical evidence as the extreme Keynesian alternative of constraining it to zero earlier proved to be. To have forced us to confront this critical gap in our theoretical understanding is an important contribution on the part of neo-Austrian economics. In this essay I am arguing that the basic premise of neo-Austrian economics is empirically refuted, but I am not also claiming that its proponents have led economics up a blind alley.

They have asked too many pertinent questions and given too many interesting answers to those questions as well, for such a claim to be defensible.

Of course, we are not totally ignorant about the economics of price rigidity. Thus, at the level of the individual experiment, Barro (1972) has shown how the pace of price change might vary with the pressure of demand for a particular monopolist if he faces a stochastic demand curve, and is forced to incur lump sum costs when he changes his price, while Mussa (1976) has extended this analysis to encompass labour market behaviour as well. Moreover, the notion that, from the point of view of the individual agent, money is a "buffer stock" that reduces the costs incurred by making erroneous decisions as a result of acting on incomplete information, has been stressed by Brunner and Meltzer (1972), Laidler (1975, Ch. 1), and Jonson (1976) among others. This notion surely helps us to understand why, in a money using economy, wrong prices might persist, because holding money reduces the costs faced by agents who fail to change them when they should.

Closely related at the level of the market experiment is the idea, propounded by Simmel (1911), Keynes (1936), and Frankel (1979) that a monetary system is not viable unless there is a certain rigidity and hence predictability to the purchasing power of money. This suggests that price stickiness, considered as social phenomenon, is not altogether undesirable. It might be noted that this idea, which is also to be found in Austrian writing, at least on inflation, is strangely absent from the work of the neo-Austrians. The literature to which I am referring here does not amount to a body of theory that would enable us to make quantitative predictions about the factors determining the pace at which money wages and prices might change with, say, the unemployment rate, but it does have enough to say about the social and economic aspects of price stickiness to give us

grounds for believing that there is nothing inherently insoluble about the problem of constructing a model that will enable us to make such predictions. It would be easier if we did not have to face this problem, but the empirical evidence I have discussed in this paper suggests that it has to be solved, rather than bypassed, as the neo-Austrians would have us do.

To argue that Say's Law does not hold as an empirical proposition is to argue that there is a very real sense in which market mechanisms fail to solve the Economic Problem, and that the notion of a general over supply of labour is not a figment of the Keynesian economist's imagination but a recurring fact of life in real world market economies. If this is really the case, any generalised a priori arguments against government intervention in the economy based on the proposition that the operation of markets leaves no room for improvement cannot be sustained. The logical possibility of an activist stabilisation policy being able to bring the economic system closer to a solution of the Economic Problem than it would get of its own accord has to be entertained. However, to entertain that possibility is not to say that it can be realised, given the current state of knowledge.

Say's Law gets violated because individual agents do not know enough to be able to get wages and prices quickly to their market clearing levels. It would seem to follow, and Howitt (1981) argues that it is in fact the case, that a government could improve matters if it had better information, or could make better use of existing information, than the private sector. Here neo-Austrian economics, flawed though it may be, yields us an insight of basic importance. The Rational Expectations hypothesis, which is logically independent of the hypothesis that markets always clear, implies that once

a government has information and begins to act upon it, that information becomes the property of the private sector as well, whose behaviour will then respond to it. If this is true, then the possibility of government intervention leading to a sustained improvement in the performance of the economy rests, not upon any once and for all superiority in knowledge on the government's part, but upon the government getting and then staying one step ahead of the private sector. It is not just that, in the current state of knowledge, it is difficult to design an effective demand management policy, but that at some time in the future new knowledge will enable us to do so. Rather it is that the difficulty of designing such a policy arises from the state of the authorities' knowledge relative to that of agents in the private sector, and there is no reason to believe that future advances in economic knowledge will systematically tip the balance of advantage in the authorities' favour.

This conclusion is, in some respects, a pessimistic one. Markets do not really solve the Economic Problem for us in the real world as well as they do in the Economics text book, and in a free society, where everyone has equal access to information, it seems that government intervention cannot be counted on systematically to help matters either now or in the future. It is important, then, to remind ourselves that this conclusion does not say that the state of the world has changed for the worse. Rather it says that the state of the world has always been what it now is in this respect, but that our understanding of this fact has improved.

It is a more than merely defensible proposition that the economic instability of the last couple of decades has stemmed in some measure from the attempts of well motivated governments to improve the performance of markets and that those attempts have failed, indeed have made matters worse,

because the governments in question were ill-informed and over-optimistic about just what they were in a position to accomplish. Undoubtedly that is not the whole story, for it is hard to blame the Cold war, the Vietnam war, Arab-Israeli conflict, to name just a few obvious political sources of economic instability, on Keynesian economics, but it is a part of the story. If that is understood, developments in economics that make us more skeptical about what either markets or governments can accomplish in the way of solving the Economic Problem, might themselves turn out to be forces making for a closer approach to a satisfactory solution to it. In this respect, the neo-Austrians, flawed though their model probably is in its reliance on Say's Law, have made a permanent contribution to macro-economics.

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